Remarks

In the subject action, claims 1, 4, 6-10, 14, 16-23, 28-29 and 32-35 were rejected under 35 U.S.C § 102(e) as being anticipated by Westerinen et al., US Patent No. 2004/0088589. Claims 2, 3, 11-13, 15, 24-27, and 30-31 were rejected under 35 U.S.C § 103(a). Claim 5 was objected as being dependent upon rejected base claim, but would be allowable if rewritten in independent form. The applicant takes this opportunity to thank the examiner for allowing the subject matter of claim 5.

The applicant respectfully disagrees with the examiner, therefore requests reconsiderations of these rejections and objection for at least for the following reasons set forth.

Claims rejected under 35 USC § 102(e)

In regards to claim 1, as shown in figure 4 and in paragraph 0033 and 0035 of Westerinen simply instructs of a series chain of events leading to the saving of the state data on the hard disk in response to AC failure condition, prior to shutting off power [e.g. paragraph 0033]. Where the power supply switches from AC power to battery power, causing the system to transitions to working state 98 (S0 on battery power) [e.g. paragraph 0035]. At the time when the power supply is switched from AC power to battery power, the battery driver issues a "critical battery alarm" event signal to the operating system, causing the system to enter hibernation state 100 (S4 in battery power) [e.g. paragraph 0035]. Upon entry to hibernation state, the contents of the RAM and some CPU settings are preserved on the hard drive first, prior to shutting off power [e.g. paragraph 0024]. Westerninen further teaches that the process of writing the contents of the RAM and some of the settings of the CPU on the hard disk, as a response to an AC failure condition, is performed in the last state in a series chain of events [e.g. paragraph 0033].

By contrast, claim 1 instructs of intervening the initiated suspend process to preserve a copy of an operation state of the apparatus state in response to an AC failure, before completing the initiated suspend process. By intervening, the initiated suspended process, the said state preservation process is granted a higher priority than the initiated suspend process. Thus, assuring that in a chain of events, the said state preservation process is to be completed first before completing the initiated suspend process. For at least these reasons, claim 1 is patentable over Westerinen.

Claims 2-7 depend from and add features to claim 1. Hence, for at least the same reasons that claim 1 is patentable over Westerinen, claims 2-7 are also patentable over Westerinen.

Regarding claim 8, in figure 4 and paragraph 0033, Westerinen teaches of the traversal of a series of state transitions in response to AC failure conditions until the system reaches the steady system off power state 102 [e.g. paragraph 0033]. Re-application of AC power does not alter the path when traversing battery power states (Standby - S3 on battery - state 96, Working - S0 on battery - state 98, and Hibernation - S4 on battery - state 100). The only effect of AC re-application is the state transition from power ("full") off state 102 to hibernation (S4 on AC power) state 106 [e.g. figure 4]. The system does not default to resume to its previous state prior to AC failure, an event such as power button or power management controller is mandated to recover from the hibernation state 106 to the working state 90 (by using the state data stored on the hard drive) [e.g. paragraph 0034]. As further shown in figure 4, the shortest traversal path in response of AC failure (from working on AC power state 90) are working on battery the system (state 98), hibernation on battery (state 100) and full off (state 102). Westerinen fails to teach of:

(1) maintaining the apparatus in a suspended to memory state, employing a backup power source, while the apparatus is in an AC failed condition, resulting in a memory of the apparatus having a suspended operational state of the apparatus. Instead, the cited reference teaches, as a response to AC failure, of a requirement of traversing the battery powered states, disconnects the battery after transition to

hibernation state 100 is completed to maintain the system in "full" off state 102. The cited reference fails to teach of suspending the system in a suspend to memory state, because the teaching does not permit the system to remain in a battery powered state [e.g. figure 4 and paragraph 0033].

(2) resuming the apparatus to an active state on re-application of AC to the apparatus, where the apparatus continues operation, starting from the operational state previously suspended in the memory. As taught by Westerinen, upon AC re-application, the system does not default to resume to its previous state prior to AC failure, it resumes to the hibernation state 106 [e.g. paragraph 0034]. It requires an event such as power button or power management controller to transition from hibernation state 106 to active working state 90 [e.g. paragraph 0034]. Furthermore, Westerinen teaches of using the state data stored in the hard disk, not from the memory [e.g. paragraph 0034]. The content of the memory is lost since, on AC re-application, the computer is always required traverse the "full" (power) off state prior to resuming to a working state 90 [e.g. figure 4, system off power state 102] . Hence, resume to working state using the state data in the memory is not taught.

Thus, for at least these reasons claim 8 is patentable over Westerinen.

Claims 9 and 10 depend and add features to claim 8, for at least the same reasons claim 8 is patentable over Westerinen, claims 9 and 10 are also patentable over Westerinen.

In regards to claim 14, as shown in figure 4 and in paragraph 0024, Westerninen merely teaches of the saving the state data on the hard disk is just an event to be performed in the last state in a series chain of events, prior to shutting off power [e.g. paragraph 0024]. The system has to complete at least one process before it saves the state data to the hard disk [e.g. paragraph 0033]. Being in the last state in a series chain of events, prior to shutting power off, the saving process carries a higher risk of incompletion due to interruption from higher priority processes. This uncertainty degrades system's availability, reliability and usability because of the risk being of an

incomplete process, and by the caused effect (from being an incomplete process) of not having the state of the system preserved. Moreover, in figure 4 and paragraph 0033 Westerinen fails to teach of a direct and efficient method of saving the state data on the hard disk when the system is in an AC failed condition. It cites that to write the state data to the hard disk, the system has to be waken up and to be turned off later [e.g. paragraph 0033].

By contrast, claim 14 instructs of a direct and efficient method. When in AC failure condition, a controller causes the OS to initiate a suspend process to place the system in a suspend to memory state. When a suspend process is initiated, a BIOS intervenes the initiated suspend process and save a copy of an operation state of the system in the persistent storage. By intervening, the process of saving the operation state is given a higher priority than the initiated suspend process, it is to be completed before placing the system in the suspend to memory state. The efficient and direct method as cited in claim 14, without the need to first wake up the system and then turn it off, improves the reliability, usability, and/or availability of the apparatus. For at least these reasons, claim 1 is patentable over Westerinen.

For at least the same reasons that claim 14 is patentable over Westerinen, claims 15-20 are also patentable over Westerinen, because claims 15-20 depend and add features to claim 14.

With respect to claim 21, Westerinen [e.g. paragraph 0034 and figure 4] teaches of resume to working system state 90 using the state data saved on the hard disk.

Applicant fails to see how the teaching of resume to working state using the state data stored on the hard disk would suggest one of ordinary skill in the art to resume to working state in the recited manner, that is:

- under AC failure condition, the system is sustained in a suspended to memory state powered by a power supply with backup power source; and

- upon on re-application of AC power, a controller to cause the BIOS to initiate a resume process and transfer to the OS to continue and complete resume process, and place the system in an active state, where the system continues operation starting from the previously suspended operational state of the system in memory.

As cited by Westerinen, the system is required to return to the hibernation state 106 (caused by the power management controller) when the AC power returns, where it remains and waits for a wake event to transition to working system 90 [e.g. paragraph 0034]. A wake event, initiated by the power management controller or by the user, is mandated to resume the working state 90 using the state data stored on the hard drive [e.g. paragraph 0034]. Moreover, under AC failure condition, the system is required to traverse a series chain of events of the working state 98, the hibernation state 100, and the power off state 100 [e.g. figure 4]. As shown in figure 4 and in paragraphs 0028-0029, and 0032-0035, the system is not permitted to stay in any of the battery powered states. The system remains in the power off state 100, where it waits for AC power to return [e.g. figure 4, System Off Power state 102]. Since both the AC power and battery power is off in the "full" off state 100, the content of the memory is lost [e.g. figure 4, from state 90 to 98, from state 92 to 96 and from state 100 to state 102]; therefore, resume to working state 90 using the data stored in memory is not taught by Westerinen. For at least these reasons claim 21 is patentable over Westerinen.

Claims 22 and 23 depend and add features to claim 21. Thus, for at least the same reasons claim 21 is patentable over Westerinen, claims 22 and 23 are also patentable over Westerinen.

As per claims 28, the cited reference [e.g. paragraphs 0024, 0028-0029, and 0032-0035] merely cites, in response to AC failure, the saving of the state data on the hard disk is processed in the last state in a sequential chain of events the system is mandated to traverse, prior to shutting off power, and to remain in the power off state 102. Westerinen fails to place high priority to the saving the state data process, it is performed after at least one completed event [e.g. paragraph 0033]. Westerinen further

fails to teach of resume to working state using the saved state data from memory, since it does not permit the system to remain in a battery state. It allows only resume to working state using the saved state data from the hard disk [e.g. paragraph 0034], a slower recovery since it has to process power up events [e.g. paragraph 0024]. Contrasted to the cited claim 28, where apparatus intervenes and saves persistent copy of the state data before allowing the initiated suspend process to place the apparatus in a suspend to memory state to complete. Advantageously, claim 28 and figure 2a also teaches of saving the state data both in a memory and in a persistent storage. Permitting options of smoothly resume to working state from either a Suspended state 216 or 218, where the system recovered the saved system state from memory, or from an Un-powered state 206, where the saved system state is recovered from the persistent storage if battery power is exhausted. In view of the reasons set above, claim 28 is patentable over Westerinen.

For at least the same reasons, claim 29 that depend and adds to claim 28, is also patentable over Westerinen.

Regarding claims 32 and 34, Westerinen merely teaches of different simple responses due to reasons other than AC failure depending on the present states:

- when the computer is in the standby state 92 (on AC power), the power management controller wakes up the system to resume to working state 90 [e.g. paragraph 0032];
- when the computer is in the working state, the power management controller instructs the OS to enter standby state 92 [e.g. paragraph 0032]; or
- when the computer is in the hibernation state 106 (on AC power), the computer resumes to working state 90 [e.g. paragraph 0034].

Instead of different responses for reasons other than AC failures, claims 32 and 34, teaches of a robust response. This response is designed to emulate the response due to AC failure for simplicity and efficacy, and to give uniformity and consistency of

responses for different occasion, to improve the availability, usability, and/or reliability of the apparatus. Applicant respectfully submits that the teaching by Westerinen, of different simple responses due to reasons other than AC failures, would not suggest to that one of the ordinary skills in the art to a method at least of:

- saving the operational state data by initiating a suspend process, intervening and preserving a persistent copy operational state data, and completing the suspend process and placing the apparatus in the suspended to memory state;

- initiating for the apparatus to respond to an AC failure condition by signaling an AC failure condition, supplying backup power for at least a time period, and waking the apparatus to respond to the AC failure condition.

For at least these reasons, claims 32 and 34 are patentable over the cited reference. Claims 33 and 35 depend and add to claims 32 and 34, respectively. For at least the same reasons claims 32 and 34 are patentable over Westerinen, claims 33 and 35 are also patentable over Westerinen,

Claims rejected under 35 USC § 103(a)

Claims 2, 3, 11-13, 15, 24-27, and 30-31 were rejected under 35 USC § 103(a) as being unpatentable over Westerinen in view of Hsu, Cheok, and Mustafa. The applicant requests reconsiderations for at least the following reasons.

Claim 2 was rejected as being unpatentable over Westerinen as applied to claim 1, and in further view of Hsu et al. (US Patent No. 6,618,813). Hsu's teaching does not cure the previously discussed deficiencies of Westerinen, therefore claim 1 remains patentable over Westerinen, even when combined with Hsu. Claim 2 depends on claim 1, incorporating its recitation. For at least the same reasons that claim 1 is patentable

over Westerinen and Hsu combined, claim 2 is also patentable over Westerinen in view of Hsu.

Claim 3 was rejected as being unpatentable over Westerinen as applied to claim 1, and in further view of Cheok et al. (US Patent No. 2004/0073818). Cheok instruction does not cure the discussion above regarding the deficiencies of Westerinen, therefore claim 1 remains patentable over Westerinen, even when combined with Cheok. Claim 3 depends on claim 1, incorporating its recitation. For at least the same reasons that claim 1 is patentable over Westerinen and Cheok combined, claim 3 is also patentable over Westerinen in view of Cheok.

Claims 11 and 30 were rejected as being unpatentable over Westerinen, and in further view of Mustafa et al. (US Patent No. 6,243,831). The applicant respectfully disagrees with the examiner based on the following reasons. Westerinen speaks of not going through a full boot sequence when the computer wakes up from hibernation state [e.g. paragraph 0024]; therefore, fails to teach of commencing a cold start reset process in response to AC re-application while it is in an un-powered state. Moreover, in response to AC power re-application, Westerinen merely teaches of returning to the hibernation state 106, where it remains and waits for a wake event prior to transition to working system 90 [e.g. paragraph 0034]. A wake event, initiated by the power management controller or by the user, is mandated to resume the working state 90 using the state data stored on the hard drive [e.g. paragraph 0034]. Whereas claims 11 and 30 teach of a smooth and continuous recovery from AC re-application while the apparatus is in an un-powered state, no requirement to remain in hibernation state and no requirement to wait for a wake event. Claims 11 and 30 teach, on AC re-application while the apparatus is in an un-powered state, causes the apparatus to:

- commence a cold start reset process, determine if there is a persistent copy of the state data as a part of the cold reset start process;

- restore the operational state data from the persistent storage to the memory (if the state data is determined to be in the persistent storage); and

- continue the cold start reset process as a resume in active state starting from the restored operational state.

As taught by Westerinen, on AC re-application, the system does not recover to previous state using the state data stored on the hard disk smoothly and continuously, it requires a wake event to wake up [e.g. paragraph 0034]. Whereas in claim 11 and 30, the apparatus smoothly and continuously resumes in active state starting from the restored operation, without having to wait for a wake event. The edifications of Mustafa does not alleviate the deficiencies of Westerinen as discussed above. Therefore, claim 11 is still patentable over Westerinen, even when combined with Mustafa. For at least these reasons, claims 11 and 30 are patentable over Westerinen, and in further view of Mustafa.

For at least the same reasons as claim 11, claims 12 and 13 that depend and add to claim 11, are also patentable over Westerinen, even in further view of Mustafa.

For at least the same reasons as claim 30, claim 31 that depend and add to claim 30, is also patentable over Westerinen, even in further view of Mustafa.

Claim 15 was rejected as being unpatentable over Westerinen, and in further view of Cheok et al. (US Patent No. 2004/0073818). Cheok instruction does not cure the discussion above regarding the deficiencies of Westerinen as applied to claim 14, therefore claim 14 remains patentable over Westerinen, even when combined with Cheok. Claim 15 depends on claim 14, incorporating its recitation. For at least the same reasons that claim 14 is patentable over Westerinen and Cheok combined, claim 15 is also patentable over Westerinen in view of Cheok.

Claim 24 was rejected as being unpatentable over Westerinen, and in further view of Mustafa et al. (US Patent No. 6,243,831). Westerinen speaks of not going

through a full boot sequence when the computer wakes up from hibernation state [e.g. paragraph 0024]; therefore, fails to teach of commencing a cold start reset process in response to AC re-application while it is in an un-powered state. Moreover, in response to AC power re-application, Westerinen merely teaches of returning to the hibernation state 106, where it remains and waits for a wake event to transition to working system 90, where it recovers the state data from the hard disk [e.g. paragraph 0034]. A wake event, initiated by the power management controller or by the user, is mandated to restore state data from the hard drive to the memory [e.g. paragraph 0034]. Whereas claim 24 teaches of a smooth and continuous recovery of the stored state data from the persistent storage, on AC re-application while the apparatus is in an un-powered state, without requirements to remain in hibernation state and to wait for a wake event. In claim 24, an AC re-application while the apparatus is in an un-powered state causes the apparatus to:

- commence a cold start reset process, determine if there is a persistent copy of the state data as a part of the cold reset start process; and
- restore the state data from the persistent storage to the memory (if the state data is determined to be in the persistent storage); and

As taught by Westerinen, on AC re-application, the system does not recover to previous state using the state data stored on the hard disk smoothly and continuously, it requires a wake event to wake up [e.g. paragraph 0034]. Whereas in claim 24, the apparatus smoothly recover the operation state previously suspended in the memory, without having to wait for a wake event. The edifications of Mustafa does not alleviate the deficiencies of Westerinen as discussed above. Therefore, claim 24 is still patentable over Westerinen, even when combined with Mustafa. For at least these reasons claim 24 is patentable over Westerinen, and in further view of Mustafa.

Claims 25-27 depend on claim 24 with all its recitation. For at least the same reasons claim 24 is patentable over Westerinen, and in further view of Mustafa, claims 25-27 are also patentable over Westerinen, even combined with Mustafa,

Conclusions

In view of the foregoing, the applicants respectfully submit that claims 1-35 are in condition for allowance. Early issuance of Notice of Allowance is respectfully requested.

The Commissioner is hereby authorized to charge shortages or credit overpayments to Deposit Account No. 500393.

Respectfully submitted,

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